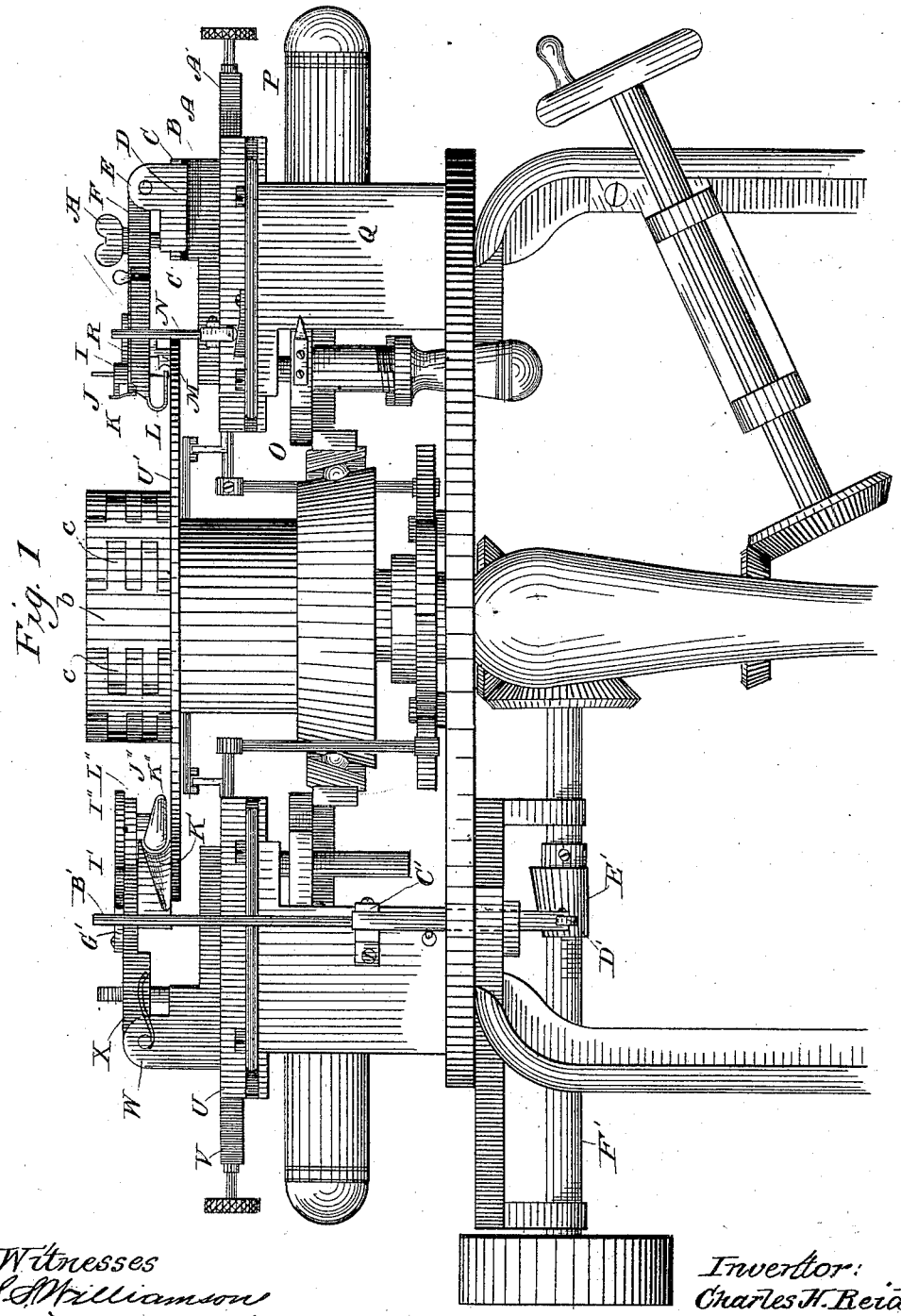
(No Model.) 3 Sheets—Sheet 1.

C. H. REID.

MACHINE FOR CURLING AND TRIMMING HATS.

No. 301,278. Patented July 1, 1884.

Fig. 1



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(No Model.) 3 Sheets—Sheet 2.

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Fig. 2

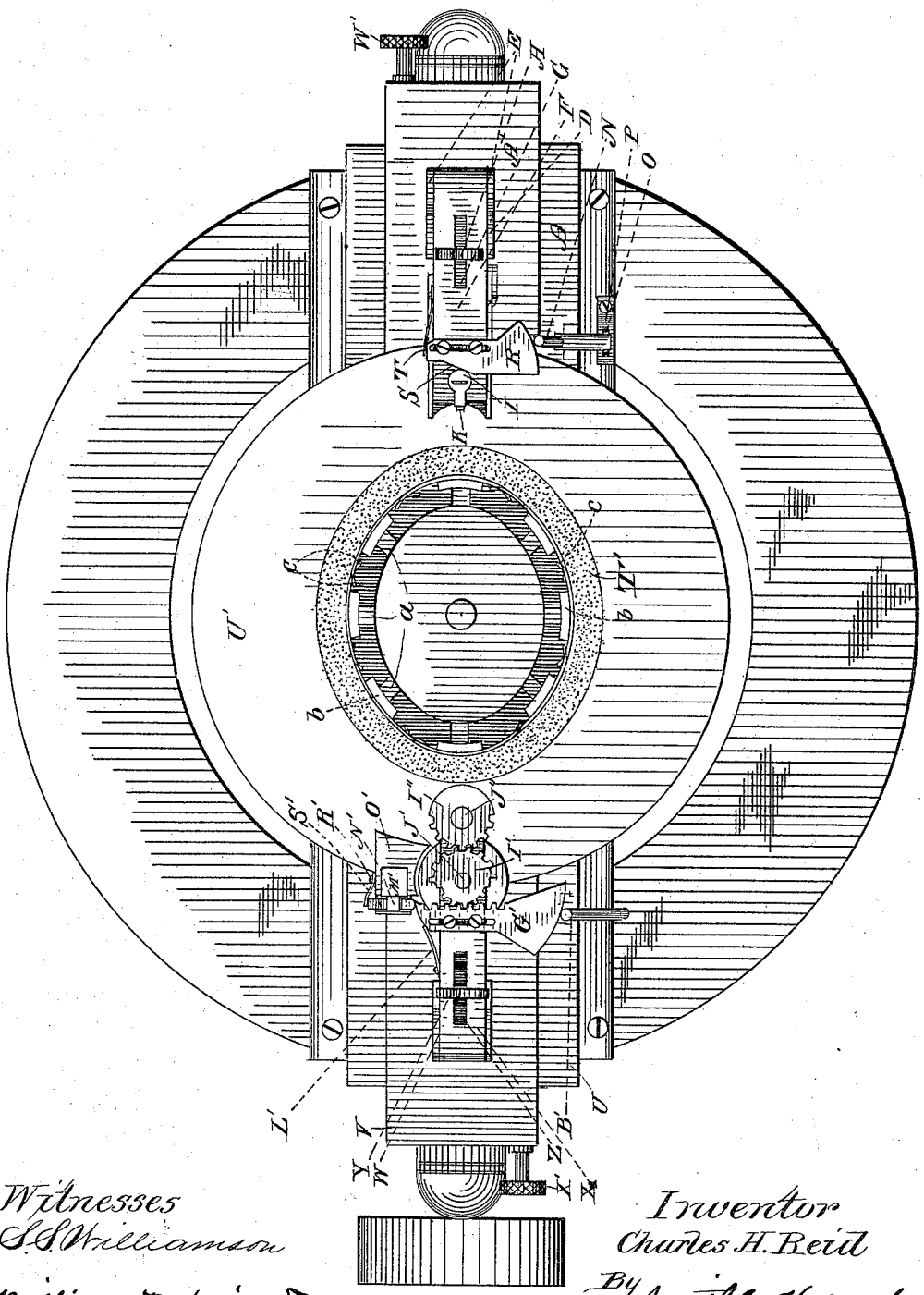

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Fig. 3

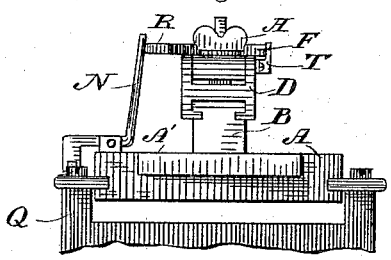


Fig. 4

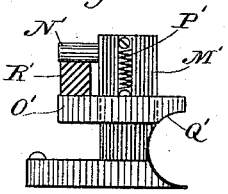
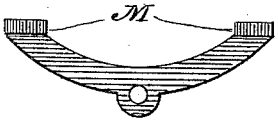


Fig. 5



Witnesses
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UNITED STATES PATENT OFFICE.

CHARLES H. REID, OF DANBURY, CONNECTICUT.

MACHINE FOR CURLING AND TRIMMING HATS.

SPECIFICATION forming part of Letters Patent No. 301,278, dated July 1, 1884.

Application filed January 31, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. REID, a citizen of the United States, residing at Danbury, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Machines for Curling and Trimming Hats; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain novel and useful improvements in machines for manufacturing felt hats, but is more especially intended as an improvement on the machines fully illustrated and described in Letters Patent granted to me as follows: No. 237,128, dated February 1, 1881, and Nos. 292,356, 292,357, and 292,358, dated January 22, 1883, and has for its objects, first, to enable the planing-tool to automatically follow the contour or curve of any curl of brim, and thereby plane hat-brims that have been curled according to any form on any machine; second, to enable the curling-tool to automatically form the desired curl on the brim of the hat, and to further perfect the shape of the curl, and to do away, if desired, with the ordinary templet; and with these ends in view my invention consists in the details of construction and combination of elements hereinafter fully and in detail described, and then specifically designated by the claims.

In order that those skilled in the art to which my invention appertains may more fully understand the same, I will proceed to describe its construction and operation, referring by letter to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation of a hat-manufacturing machine constructed in accordance with my said Letters Patent, and embodying my improvements; Fig. 2, a plan view of the same; Fig. 3, a detail rear elevation of the planing-tool head, adjusting-plate, slide, and means for operating the former-plate of the planing-tool; Fig. 4, a detail view of the secondary curling device, and Fig. 5 a detail view of the shoe.

Similar letters denote like parts in the several figures of the drawings.

It is not deemed necessary to particularly describe herein all the parts and the operation of the machine—such as the templet and the means for operating the same, and the construction and operation of the parts to which my improvements are immediately attached, as said construction and operation form no part of my present invention, and are moreover fully shown and described in the patents above mentioned.

A is the slide, to which movement is imparted in the manner described in my previously-mentioned patents. Pivoted on an adjusting-plate, A′, arranged within this slide, is a block or support, B, constructed with a flanged head, C, over which the carrier D is arranged, so as to slide freely, as will be seen by reference to Figs. 1 and 3. The upper portion of this carrier is extended to form ears E, between which is pivoted or hinged the tool-head F. This head is slotted, as seen at G, Fig. 2, and an ordinary clamping-screw, H, is attached to the carrier in any manner, so as to turn freely, and adapted to extend through said slot, and by turning the head transverse to said slot secure the tool-head against upward movement.

I is the tool-holder, and J the cutting-tool secured therein in any ordinary manner. This holder is arranged in the forward end of the head F in such manner as to have a free sliding movement longitudinal of said head, as will be seen at Fig. 2, for the purpose presently explained.

K is a spring, which bears against the forward portion of said holder, to keep it in its normal position.

L is a hook hinged to the front end of the head F, so as to be readily swung upward, and admit the hat-brim, and then dropped down in proper position underneath the flange of the brim.

N is a bell-crank lever, pivoted to the slide A, and having an anti-friction roll, O, at its lower end, which is adapted to travel on the inclined track P, rigidly secured to or cast integral with the frame Q of the machine. The upper end of this lever bears against a former-plate, R, arranged on the head F, so as to have a sliding movement transverse to the length of said head. This former-plate has an incline,

S, which bears against the sliding tool-holder I, and its outer edge, against which the lever N bears, is curved to insure the uniform action of said lever, since an allowance has to be made for the independent vibration of the block or support B, the object of which latter motion is fully explained in my former patents.

T is a flat spring, which bears against the inner edge of the plate R, and returns it to its normal position after the lever has ceased its action on the same. The operation of the lever acts to throw the cutting-tool inward, and thereby increase the distance between the shoe and said tool for the obvious purpose of planing the wider portion of the flange of the brim. The pitch of the inclined track P determines the throw of the lever N, and the pitch of the decline S determines the throw of the tool-holder I. Should it become desirable to alter the throw of said tool-holder in order to adapt it to flanges of different widths, this may be accomplished by substituting former-plates with different inclines; or the track may be constructed with compound inclines, and be adjusted so that the roll O may travel over the desired incline and impart to the lever a variable throw. The shoe M is constructed as shown in detail at Fig. 5, and is pivoted to the tool-head F. The curled brim of the hat will set up within the concave portions of the shoe, so that as the hat is revolved it will be readily understood that the outside of the curled brim will act as a templet and cause the planing-tool to describe a line of movement corresponding to the general elliptical shape of the hat-brim. In planing the curled brims, I am enabled to do away entirely with the usual former or templet heretofore used, because the shoe, in conjunction with the hook L, which embraces the under portion of the brim-flange, completely performs the functions of a templet.

U is a slide, constructed and operated precisely like the slide A, and V is an adjusting-plate, corresponding likewise to the plate A'.

W is a block or support pivoted to the adjusting-plate V, and X the carrier hinged or otherwise attached to said block, so as to swing backward. A fastening-screw, Y, extending through a slot, Z, in said block, secures it as against upward movement in the same manner as in the case of the tool-head F.

B' is a bell-crank lever pivoted to the frame of the machine, as seen at C', Fig. 2, and having an anti-friction roll, D', on its lower extremity bearing against a suitable cam, E', on the shaft F', said cam being adapted to act on the lever, and throw the upper end thereof inward after the same manner in which the inclined track P acts on the lever N.

G' is a former-plate arranged to slide on the carrier X, and with its outer edge curved and adapted to be acted upon in the manner and for the purpose hereinbefore described, in connection with the plate R. This plate G' is provided with a rack, H', which meshes with a gear-wheel, I', rigidly screwed on a short shaft, J', extending through the forward portion of the carrier X.

K' is the female curling-tool, which is secured on the lower extremity of said shaft, and is concaved or formed, as shown, to conform to the general style of curl desired.

L'' is a plate attached to said carrier in such manner as to have a movement longitudinal thereof. Through this plate a short shaft, J'', extends, having secured on its upper extremity a gear-wheel, I'', and on its lower extremity the male curling-tool, K''. The plate L'' is adjusted until the wheel I'' is in engagement with the wheel I', and then secured in this position by a set-screw (not shown) or any other suitable means. This will bring the curling-tools in their proper operation and relative positions, as clearly shown at Fig. 1. When it is desired to remove the hat after it has been curled, the plate L'' is moved inward, so that the male curler will be withdrawn from underneath the flange of the brim, and their carrier X then thrown backward by reason of its hinged connection with the support W. As the lever B' operates on the former-plate G', the curling-tools will commence to revolve and act on the brim of the hat, the timing of the revolution of the hat and of the turning of the curlers being such that the latter will act on the brim, so as to form a curl greatest at the sides, and then gradually decreasing toward the front or rear portions. When the curlers have been revolved through the arc of a half-circle, the construction of the cam E' will then permit the lever B' to be returned to its normal position by the action of the spring L' against the former G', and the movement of the curlers will then be reversed, and the said spring will perform the function of a motor and return the curlers to their normal position, said curlers meantime acting on the other half of the hat-brim in precisely the same manner as in the former case. In order to preserve more completely the curl given to the brim, I attach to the adjusting-plate V a post, M', having a lug, N', projecting from the upper portion thereof, and adapt a block, O', to slide thereon. This block is held up in its normal position by means of a spring, P', all of which will be seen by reference to Fig. 4. The inner under portion of the block is curved, as seen at Q', for the purpose presently explained.

R' is a wedge adapted to enter between the lug N' and the block O', and with its heel end held in constant contact with the former-plate G' by means of a spring, S'. When the lever acts on the said plate, the wedge will be forced between the lug N' and block O', thereby increasing or decreasing the distance between the block and the level of the adjusting-plate, as the case may be. The inner edge of this plate is curved similarly to the outer edge, and for the same reason, so that the concerted action of the

wedge and plate will cause the distance between the block O′ and plate V to vary in proportion to the different degree or amount of curl to the brim. As the brim passes from the curlers K′ K″, it will immediately be carried underneath the curved portion Q′ of the block O′, and the same mechanism which imparts motion to the curlers will, therefore, at the same time, control the movement of the block O′ in the manner aforesaid, which will preserve and render more complete and finished the shape already given by the curlers.

In my Patent No. 237,128 I have shown and described means for clamping the hat, consisting of a series of radial arms having elastic steel plates attached to two of said arms, the device being operated by a rotating scroll-wheel. In my present construction, I attach to or cast integral with each of the said radial arms *a* an independent steel or other plate, *b*, each plate being constructed with fingers *c* at both ends, adapted to interlock with similar fingers in the adjacent plates, as will be clearly seen at Figs. 1 and 2. The great advantage in this construction is that I am enabled to readily renew any portion of the perimeter of the clamping-surface, and also by the interlocking of each plate the clamp, as a whole, is greatly strengthened, while at the same time there is no space between the plates, so that the hat is uniformly and completely clamped.

As a preventive against the slipping or displacement of the hat, I place a strip, T′, of wool-carders' brush or coarse sand-paper or the like on the platform U′ and around the clamping-surface. A ring of lead or any suitable material may be placed on the crown of the hat, to hold the brim in contact with said surface; or any other suitable device may be used to effect this purpose. The planing and curling tools are set up to any shape of hat-brim by means of the screws W′ X′ in the adjusting-plates A′ V, respectively, the arrangement of these screws being precisely the same as that shown and described in my Patent No. 292,357.

By the use of my improvement I am enabled not only to adjust the curling and planing tools to any hat-brim, but these tools are adapted to automatically form and follow the contour of any style and width of flange on the brim, which has never before been accomplished.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for manufacturing hats, the planing-tool, in combination with means for increasing or decreasing the distance between said tool and the outside contour of the flange of the brim, whereby a variable line of movement is given to said tool, substantially as set forth.

2. In a machine for manufacturing hats, the planing-tool arranged within an adjustable tool-head, whereby said tool may be set forward for any size of hat-brim, in combination with mechanism for imparting to said tool an independent movement transverse to the flange of the brim, whereby said tool is made to follow the desired inner curve of the flange of the brim, substantially as described.

3. The tool-carrier capable of an independent longitudinal sliding movement, and having attached thereto means for supporting the planing-tool, in combination with the supporting-block pivotally attached to the adjusting-plate and the sliding plate, substantially as shown and described.

4. In a hat-manufacturing machine, the planing-tool and tool-holder mounted in a head having a free independent longitudinal movement, in combination with means for throwing said tool in vertical planes differing in proportion to the desired width of the upper portion or flange of the curled brim, substantially as set forth.

5. The shoe constructed and arranged as described, in combination with means for holding the curled brim and shoe in constant contact, whereby the latter is adapted to serve as a templet or former for the planing-tool, substantially as described.

6. In a hat-manufacturing machine, the curling-tools, in combination with means for increasing or decreasing the speed of their revolutions, whereby different portions of said tools are caused to act on the hat-brim at different times, substantially as set forth.

7. In a machine for manufacturing hats, the curling-tools constructed and arranged as described, in combination with mechanism for imparting to said tools a variable motion, whereby the desired curl may be automatically produced, substantially as described.

8. In a machine for manufacturing hats, the curling-tools adapted to revolve in combination with means for automatically revolving said tools against the hat-brim with a variable speed, whereby the varying shape and style of curl may be given, substantially as and for the purpose set forth.

9. In a machine for manufacturing hats, the hook arranged on the forward end of the tool-head, and adapted to embrace the under side of the flange of the curled brim, whereby a support for the latter is afforded during the operation of the planing-tool, substantially as shown and described.

10. In combination with means for curling the hat-brim, as described, means for acting upon the curled brim after it has been operated on by the curling-tool, whereby the shape of the curl is perfected and finished, substantially as set forth.

11. The carrier D, arranged to slide freely on the support B, in combination with means for adjusting the normal position of said support, substantially as shown and set forth.

12. The carrier D, arranged to slide freely on the support B, and having pivoted thereto the tool-head F, carrying tool-holder I, with planing-tool J, mounted therein, in combina-

tion with means for operating said tool-holder, and mechanism for adjusting the normal position of said support, substantially as specified.

13. The combination of the sliding carrier D, tool-head F, tool-holder I, planing-tool J, hook L, shoe M, spring K, former-plate R, spring T, bell-crank lever N, pivoted to slide A, and having anti-friction roll O, inclined track P, support B, adjusting-plate A′, slide A, and means for operating said slide, substantially as set forth and described.

14. The former-plate R, arranged to slide on the tool-head, as described, and with inclined lateral edge and curved outer edge, in combination with means for actuating said plate and the tool-holder, substantially as described.

15. The former-plate R, arranged to slide on the tool-head, as described, and with inclined lateral edge and curved outer edge, in combination with the bell-crank lever N, pivoted, as shown, tool-holder having planing-tool mounted therein, means for forcing said lever against said plate, means for returning the tool-holder to its normal position, the shoe and hook, substantially as and for the purposes hereinbefore set forth.

16. The support W, having pivoted thereto the carrier X, with curling-tools K′ K′ attached thereto, in combination with the plates V U, and means for operating the same, as set forth.

17. The curling-tools K′ K″, arranged within the carrier X, in combination with the former-plate G′, and means for operating said plate, substantially as described.

18. The former-plate G′, arranged to slide on the carrier X, as described, and racked on one side, in combination with the gear-wheels I′ I″, mounted on the same shafts with the curlers, and means for operating said plate and returning the same to its normal position, substantially as specified.

19. The former-plate G′, arranged to slide on the carrier X, as described, and racked on one side, and with its outer edge curved, as shown and set forth, in combination with the curling-tools, bell-crank lever, and means for forcing said lever against said plate.

20. The former-plate G′, arranged to slide on the carrier X, as described, and racked on one side, and with its outer edge curved, as shown, in combination with the gear-wheels I′ I″, curling-tools K′ K″, bell-crank lever B′, pivoted to the frame of the machine, and having anti-friction roll D′, and cam E′, mounted on the shaft F′, substantially as specified.

21. The post M, secured to the adjusting-plate V, and provided with lug or projection N′, in combination with the vertically-sliding block O′, having its under outer end curved, as described, spring P′, wedge R′, and means for actuating said wedge, substantially as set forth.

22. In combination with the former-plate G′, with its inner edge curved, as described, the wedge R′, adapted to depress an auxiliary curling-block, and means for returning said wedge and block to their normal positions, whereby said block may be adapted to the varying heights of the curl of the brim, substantially as described.

23. In a hat-manufacturing machine, the horizontal platform which supports the hat-brim, having formed integral therewith or affixed thereto a roughened or serrated surface adapted to act on the under side of the brim and prevent the latter from slipping, substantially as shown and described.

24. In a hat-manufacturing machine, a device for clamping the hat, consisting of radial arms having attached to or cast integral with their outer extremities, steel or other plates, having at each end thereof fingers adapted to interlock with each other, in combination with means for operating said radial arms, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES H. REID.

Witnesses:
P. H. LYNCH,
JAMES E. WALSH.